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11-5 1988

ghosts: Bombardia....

Hi Peter -

I'm receiving some ancient  
loose ends. Will you tolerate a few  
antiques from fungal genetics?

① Was the Bombardia story ever  
cleared up? H. Zickler bc

Relation to D. Zickler?

Your book, (4<sup>th</sup> ed.) hardly gives  
passing mention.

②... see some marginal notes.

Sorry we haven't  
contacted again in  
a long time

x... ② 017/17/6/88 m9 w/ P269, P276

Heredity 2

(1948)

MICROBIAL GENETICS

147

fungi has, however, uncovered certain instances of exceptional chromo-  
some behaviour that are not revealed by less penetrating methods.

In *Neurospora*, Lindegren and Lindegren (1942) have demonstrated  
specific patterns of chromatid interference. Unfortunately, the  
markers were morphological mutants which some workers have  
found difficult to classify, at least in combinations. This fungus is  
unquestionably very well suited to the analysis of crossing-over, and  
fortunately there are now available an unlimited number of bio-  
chemical mutant markers which can be scored without ambiguity  
in any combination. It is to be hoped that the current revival of  
interest in crossing-over may motivate a reinvestigation of interference  
in *Neurospora*.

The coprophilous species *Bombardia lunata* exhibits some autono-  
mous characters of the ascospores. Segregation of these characters  
can be determined by inspection, thus circumventing the necessity  
of manual isolation and transfer of each spore. From data tabulated  
by Zickler (1934), Catcheside (1944) inferred that the segregation was  
polarised, the mutant allelomorph tending to the proximal pole of  
the ascus. Elucidation of the mechanism operating has been hindered  
by our ignorance of Zickler's whereabouts and of his unique *Bombardia*  
cultures. Attempts to recover comparable species from field collections  
have been unsuccessful, Dr Catcheside tells me. // \*

A different sort of bias, affecting the proportions of *symmetrical*  
(Aaaa or aAAA) and *asymmetrical* modes of post-reduction, has been  
studied by Whitehouse and Haldane (1946). They suggested that  
asymmetrical segregation will result from the retention of crossover  
chromatids medially, the non-crossover chromatids more usually  
reaching the poles, and the preservation through the second division  
of this orientation. Their analysis of data from diverse sources  
suggested a doubtfully significant excess of asymmetric reductions.

Shay and Keitt (1945) tested segregating asci of the apple scab  
fungus *Venturia inaequalis*, from a somewhat different viewpoint.  
Cytological study had been inconclusive as to the possible rearrange-  
ment of nuclei in the developing ascus as might prevent discrimination  
between first- and second-division segregations. Breaking the order  
in the four-nucleus stage would result in spurious, asymmetric post-  
reductions in asci in which there had actually been a first-division  
segregation. Other things being equal, this would result in an excess  
of asymmetric asci, which was not found, however, for factors con-  
trolling pathogenicity on differential hosts.

The mathematical problems of tetrad analysis have been discussed  
by Mather (1935) and Mather and Beale (1942). Complete analysis  
depends on the recovery of spores in intact linear order; but some  
information can be obtained as to centromere relations of factors even  
in tetrads, such as yeast asci, where the linear order is not preserved.  
If two independent factors are both closely linked to a centromere,  
the majority of asci will contain either two parental combinations or